RESPONSE TO PAPER BY R. BRIAN HAYNES, M.D., PH.D.: ORGANIZING AND ACCESSING THE LITERATURE*

NANCY M. LORENZI, PH.D.
Associate Senior Vice President
University of Cincinnati Medical Center
Cincinnati, Ohio

When reading Dr. Haynes' paper, I recalled two contrasting items. One, a lecture delivered in 1950 at the California Institute of Technology titled "Gunfire at Sea: A Case Study of Innovation,"[1] and the second, Thomas Peters' new book *Thriving On Chaos*,[2] published in 1988.

The "Gunfire at Sea" article begins with an anecdote about a time motion expert who was called in to simplify various firing procedures for the British. The expert watched one of the gun crews of five men at practice in the field for some time.

Puzzled by certain aspects of the procedures, he took some slow motion pictures of the soldiers performing the loading, aiming, and firing routines. "When he ran these pictures over once or twice, he noticed something that appeared odd to him."[1] A moment before the firing, two members of the gun crew ceased all activity and came to attention for a three second interval extending throughout the discharge of the gun. When the gun was discharged, they again resumed their activity. He was very puzzled and summoned an old colonel of artillery, showed him the pictures, and pointed out this strange behavior. "What", he asked the colonel, "did it mean?" The colonel, too, was puzzled. He asked to see the pictures again and again. Finally, when the performance was over, he said, "I have it. They are holding the horses."[1]

A major portion of the "Gunfire at Sea" article reviews the entire process of the introduction of a new idea into a complex system. The idea was the continuous-aim firing method and the complex organization was the United States Navy.

Very briefly, the continuous-aim firing method was first devised by a British officer in 1898. The British officer was concerned about extremely

Presented in a panel, Organizing and Accessing the Literature, as part of a *Symposium on The Future of Information Systems for the Medical Sciences* held by the Committee on Medical Information of the New York Academy of Medicine April 25, 1988.

poor target hits by gunfire during practice sessions. He noticed that one gun crew was exceptionally better than the others. He watched this crew, and after a time noticed that one person had created a strategy to compensate for the roll of the sea. The British officer then proceeded to make the same changes in the other gun crews and observed that their accuracy was increasing.

While on duty in the South China Sea, the British officer met an American officer. The two officers shared similar philosophies about the practices of their two navies. The American officer was intrigued with the success of the new continuous-aim firing of the British officer. He began to try the same principles in those areas he controlled. It worked successfully. There it was, the new idea.

The American officer tried to introduce the changes into the American Navy. The change process occurred in three stages. During the first stage, the Navy officer said, "I have a great idea, it works. It's been working for the last two years with the British." In this first stage, there was no response from the Navy's leaders to any of the direct comments. "The reports were simply filed away and forgotten."[1] The fellow was very persistent and in the second stage the officer became more aggressive in documenting his beliefs with statistics and case studies. The response from Washington was equally focused on statistics, saying that he was wrong and cited in very authoritarian words why his continuous-aim firing system was impossible.

During the third stage the officer became more aggressive and argumentative. When his opposition rose to a "crisis" point, the American officer wrote to President Theodore Roosevelt. President Roosevelt had a tendency to listen to people and thus brought the American officer back from China in late 1902, three years after the idea of continuous-aim firing was first developed by a British officer. Roosevelt installed the officer as Inspector of Target Practice, a post the naval officer held throughout the remaining six years of the Roosevelt administration. That naval officer was universally acclaimed "as the man who taught us how to shoot."[1]

My second set of thoughts came from Thomas Peters' 1988 book, *Thriving on Chaos*. In this book Peters continues to expand his two earlier books which were *In Search of Excellence*[3] and *A Passion for Excellence*.[4] In his first two books Peters said he had a good idea.

He was excited and many people started coming to his conferences and they would say, "This is wonderful, but what do we do? How do we do it?" He said, "I have no answers." He had all the issues. He could tell you what

all the problems were, but had no way to solve them. During one of his conferences, Peters started listing prescriptions for change. Now he has a series of statements involving leadership, system changes, customers, innovation, etc. There are about 45 specific "statements" that an organization needs to do in order effectively to survive and thrive today.

In *Thriving on Chaos* Peters continues to expound the changing nature of our societies, the need to change, and comfort with the change process. Peters stresses on many occasions throughout his book the importance of listening to people and paying attention to their needs. Peters indicates that the pace of our generation of new knowledge, ideas, etc. is increasing and that we must be comfortable with this state of chaos if we are to succeed.

What does a change process of continuous-aim firing for the U.S. Navy at the turn of this century and Thomas Peters' 1988 book have in common with organizing and accessing the biomedical literature as presented by Dr. Haynes? Several points include:

During our first stage of change, we had experts telling us that we needed to change—even offering some future options as to what we should or should not do.

The change process may make a dedicated person seem like a member of "the lunatic fringe." By this I mean if one is introducing change into a complex organization, one could be questioned constantly because major change is disruptive to the total organization.

We have been incredibly successful with more and more sophistication in our indexing and presentation of the indexes for the vast amount of biomedical literature. As Dr. Haynes points out, 70% of the practicing physicians' clinical information problems went unanswered, and the remaining 30% were addressed mainly through consultation with colleagues. Do we keep developing more and more sophisticated indexing techniques and technologies and still not answer the basic clinical questions for the health of our people? Based on these percentages, let us pretend that a practicing physician saw 8,000 patients a year. He will have information-based problems with 5,600 of those patients. What is the difference? If it has been working, why change it? Today's "new" patients want to know why, when, who, and how. They will transform the information seeking behavior of physicians.

The Integrated Academic Information System has options to help the situation. Like Thomas Peters' original books, they were excellent, but people needed a guide. Peters, therefore, wrote *Thriving on Chaos* as a guide to help people to understand, interpret, and, most of all, take action on the principles

stated in the original two books. The original The Integrated Academic Information System report is excellent; now we need a guide to the future and how to take action.

Another major point is listening. In both the 1898 and 1988 examples, listening and observing are major efforts. We in the medical information professions must listen to those who need the information; we cannot talk only to each other. Physicians have answered the same questions for many years the same way, namely, "They love the literature and read often", but their basic information needs have gone unanswered. It is not citations that practicing physicians require—it is answers to specific questions.

Innovation is critical to success. We must constantly ask—why, why not. We must pilot and prototype as rapidly as possible. We must not be prepared to fail. Programs such as the Integrated Academic Information System offer major opportunities for innovation. It is important that these sites create options, that they create opportunities to pilot, to test, and to fail. At our institution we are attempting to link the patient record to laboratory, x-ray data, drug interactions, and the library information. We have built a pilot of our prototype which will be evaluated by content people from the Medical Center. We are certain that the pilot of the prototype will have to be modified before the prototype version can be developed and taken the next step further.

Our "customers" are critical. We must ask our users what their needs really are and then design systems and programs to meet their needs. One of the exciting concepts that has come along is the Integrated Academic Information System, and we are fortunate to be one of the sites. Our system's planning and prototype efforts have evolved based on listening to many people across our Medical Center. Our goal is to develop products that meet the needs of the Medical Center.

Another problem with introducing change is politics. No one has yet mentioned the political process, but whenever major changes are introduced, such as the American officer trying to introduce a new concept, one also has a political process. Who is in charge? Why should this character from the South China Sea tell us to change our patterns? In an academic medical center the issues are "Who is going to really lead this area?" Is it the computer people, physicians, or librarians?

It takes many people working together to accomplish the tasks and the strategic direction that we need to accomplish. We must put aside our political issues and bring our best minds together.

Finally, the National Library of Medicine in their long range planning continued to review how the medical literature is organized, what types of

information people need access to, and what are future successful strategies to gain that access.

I strongly support the views presented by Dr. Haynes. We need to continue some of the directions that we have in place. We need to stop and ask ourselves what we can do that will best meet the information needs of practicing health professionals.

REFERENCES

1. Morison, E.E.: Gunfire at Sea: A Case of Innovation. In: *Men, Machines, and Modern Times*. Cambridge, MA, M.I.T. Press, 1966, pp. 17-44.
2. Peters, T.J.: *Thriving on Chaos*. New York, Knopf Random House, 1987.
3. Peters, T.J. and Waterman, R.H., Jr.: *In Search of Excellence*. New York, Harper & Row, 1982.
4. Peters, T.J. and Austin, N.: *A Passion for Excellence*. New York, Random House, 1985.